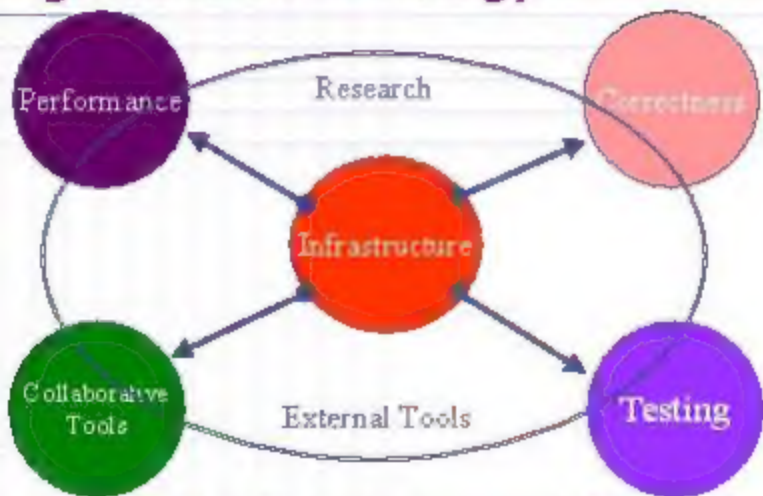




# PPRC Performance Tools

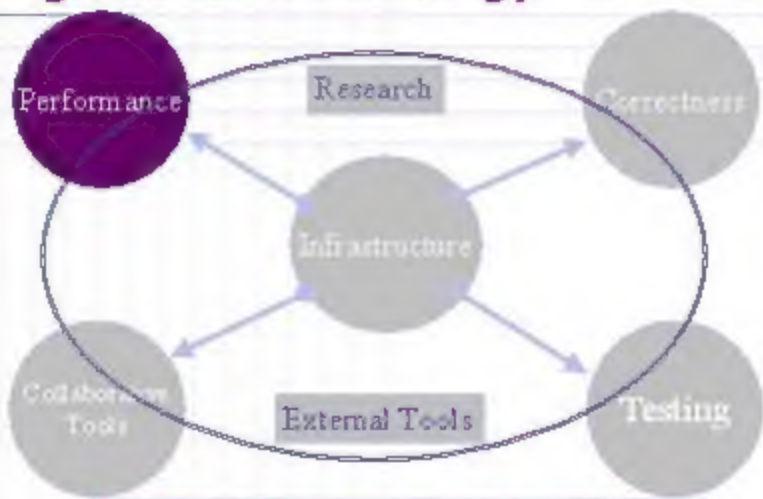
David Erb

# Organization Strategy



Research, Build, Acquire, License and collaborate

# Organization Strategy



Research, Build, Acquire, License and collaborate

# PPRC Performance Team Goals

- ◆ Provide an ideal environment for performance tuning to radically improve the effectiveness of Microsoft product teams
  - Standard MS performance console
  - Enable more complete performance tuning
  - Reduce the effort associated with existing performance tuning practices
  - Lower the skill level required to do tuning
  - Share key technologies with MS product groups

# Key IceCAP Technologies

- ◆ Post-link instrumentation
- ◆ Fast, scalable trace logging
- ◆ Fast, scalable trace analysis
- ◆ Fast, scalable symbol engine
- ◆ Flexible UI featuring:
  - Powerful trace and summary views
  - Performance navigation
  - Shadow stack analysis engine

# IceCAP 4.1

DEMO

## Current IceCAP Directions

- ◆ Kernel profiling
- ◆ Page fault profiling
- ◆ I/O profiling
- ◆ Registry profiling
- ◆ Additional platforms
  - IA 64, WinCE, COM+

## Future IceCAP directions

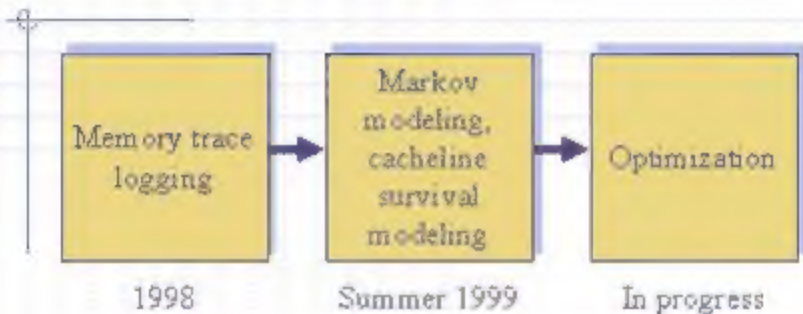
- ◆ Regression analysis
- ◆ Scalability analysis
- ◆ Dynamic instrumentation
- ◆ Distributed profiling
- ◆ Selective profiling
- ◆ Memory profiling



# Memory Profiling

- ◆ Performance is often limited by memory hierarchy
  - Servers: cache capacity, conflicts
  - Desktops: paging
- ◆ Today, we can find out how badly we're doing
- ◆ Challenge: pinpoint what to do to improve
  - Identify data in cache conflicts
  - Use new instructions and architectures
  - "BBT for data"

## DLP process



### Partial results:

7 hand-optimized structs  
in SQL Server 7.5:  
**1.3% ( $\pm 0.2\%$ ) speedup**  
on TPC/C benchmark

### Known issues:

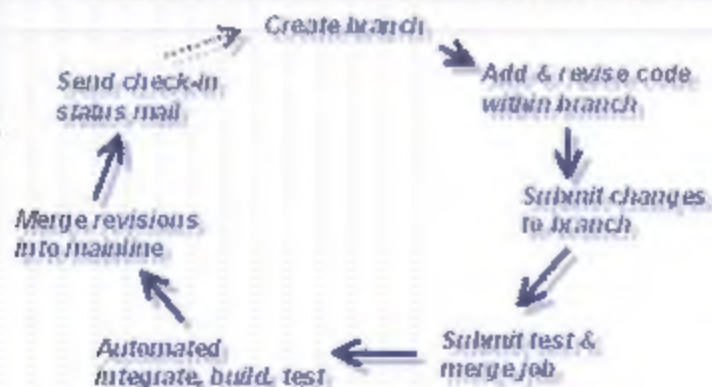
Inheritance  
Bit fields  
Large structures  
Scalability

# Collaboration Tools

- ◆ Development teams waste time on a huge scale
  - Check-In windows
  - Broken builds
  - Inefficient, fragmentary quality measurement
  - Disconnected project data
- ◆ We're getting started in exploring solutions
  - Research platform for parallel development
  - Developing projects on top of research platform
- ◆ Big challenge, huge opportunity

# Build Lab Toolkit

- Platform for collaboration tools research





Questions?

